

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of	:	Customer Number: 49745
	:	
Jeffrey S. REITER	:	Confirmation Number: 9583
	:	
Application No.: 10/810,638	:	Tech Center Art Unit: 1795
	:	
Filed: March 29, 2004	:	Examiner: McDonald, Rodney Glenn
	:	
For: ELECTRICAL BIASING OF GAS INTRODUCTION MEANS OF PLASMA APPARATUS		

TRANSMITTAL OF APPEAL BRIEF

Mail Stop Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

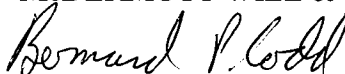
Sir:

Submitted herewith is Appellant's Appeal Brief in support of the Notice of Appeal filed June 3, 2008. Please charge the Appeal Brief fee of \$540.00 to Deposit Account 500417.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due under 37 C.F.R. §§ 1.17 and 41.20, and in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP



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Date: December 3, 2008

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Docket No.: 050103-0554

PATENT

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APPEAL BRIEF

Mail Stop Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed June 3, 2008, wherein Appellant appeals from the Primary Examiner's rejection of claims 1-8, 11-14, and 16-20.

Real Party In Interest

This application is assigned to Seagate Technology LLC by assignment recorded on March 29, 2004, at Reel 015157, Frame 0310.

Related Appeals and Interferences

Appellant is unaware of any related appeals and interferences.

Status of Claims

1. Claims canceled: 9, 10, and 15
2. Claims pending: 1-8, 11-14, and 16-20.
3. Claims rejected: 1-8, 11-14, and 16-20.
4. Claims on appeal: 1-8, 11-14, and 16-20.

Status of Amendments

In the Advisory Action mailed May 9, 2008, the Examiner indicated that the Amendment Under 37 C.F.R. § 1.116 filed April 30, 2008 would be entered upon the filing of an appeal.

Summary of Claimed Subject Matter

An aspect of this invention, per claim 1, is an apparatus **10** adapted for treating or processing at least one substrate/workpiece **5** in a plasma comprising a chamber **2** defining an interior space and means for generating a plasma **12, 12'** in the interior space of the chamber **2** (page 5, lines 22 to 26 and page 11, lines 1 to 7 of the written description). Mounting means are adapted for positioning at least one substrate/workpiece in the interior space of the chamber **2** for receiving treatment in the plasma (page 6, lines 1 to 3 and page 11, lines 7 to 9 of the written description). A gas supply means **6** injects gas(es) into the interior space of the chamber **2** comprising an inlet portion **7** extending exteriorly of the chamber **2**, an outlet **8** extending into the chamber and including a pair of arcuately-shaped tubular gas outlet portions **9** for injecting gas(es) into the interior space, and means for applying a bias potential **15** to the gas supply means for suppressing plasma formation at the outlet portions **9** (page 6, lines 4 to 10 and page 12, lines 11 to 17 and 21 to 22 of the written description). The means for applying a bias potential **15** is electrically isolated from the means for generating a plasma **12, 12'** (page 6, lines 13 to 14 and page 12, lines 17 to 21 of the written description). The apparatus comprises

a spaced-apart pair of cathode/target assemblies **4, 4'** and the mounting means positions at least one substrate/workpiece **5** in the space between the pair of cathode/target assemblies **4, 4'**, and the arcuately-shaped tubular gas outlet portions **9** are positioned between the spaced-apart pair of cathode/target assemblies **4, 4'** (page 12, lines 4 to 10, 14 to 17, and 21 to 22 of the written description and Fig. 2).

Another aspect of the invention, per claim 11, is a method of treating or processing at least one substrate/workpiece **5** in a plasma comprising steps of providing an apparatus **10** comprising a chamber **2** defining an interior space and including means for generating a plasma **12, 12'** within the interior space (page 7, lines 7 to 10 and page 11, lines 1 to 7 of the written description). At least one substrate/workpiece **5** is mounted or positioned in between a spaced-apart pair of cathode/target assemblies **4, 4'** in the interior space of the chamber **2** (page 7, lines 11 to 12 and page 11, lines 7 to 9 of the written description). Gas(es) are injected between the spaced-apart pair of cathode/target assemblies **4, 4'** by means of an electrically isolated gas supply means **6** having a pair of arcuately-shaped tubular gas outlet portions **9** (page 7, lines 13 to 14 and page 12, lines 11 to 17 and 21 to 22 of the written description). A plasma is generated in the interior space of the chamber **2** via the means for generating a plasma **12, 12'** (page 7, line 15 of the written description). A bias potential is applied to supply means **6** to suppress plasma formation at the outlet portions **9**, and the at least one substrate/workpiece **5** is treated or processed in the plasma (page 7, lines 16 to 17 and page 12, lines 17 to 21 of the written description). The gas supply means is electrically **6** isolated from the means for generating a plasma **12, 12'**(page 12, lines 17 to 21 of the written description).

Grounds of Rejection To Be Reviewed By Appeal

1. Claims 7 and 13 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.
2. Claims 1-8, 11¹-14, 16, and 18-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Zejda (US 5,228,968) in view of Maeda et al. (US 5,620,523) and Ando et al. (US 6,458,253).
3. Claim 17 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Zejda in view of Maeda et al. and Ando et al. and further in view of Suzuki et al. (U.S. Pat. No. 6,627,253).

Argument

1. Rejection under 35 U.S.C. § 112, second paragraph, as being indefinite.

Claims 7 and 13

The Examiner's Position:

Claims 7 and 13 were rejected because they recited other methods other than sputtering.

Appellant's Position:

Upon filing this appeal brief, the Amendment Under 37 C.F.R. § 1.116 filed April 30, 2008 is entered, and this rejection is overcome. Amended claims 7 and 13 only recite sputtering methods. Appellant submits that the amended claims fully comport with the requirements of 35 U.S.C. § 112.

¹ The Final Rejection mailed March 3, 2008 stated that claims 10-14 are rejected, however, claim 10 was canceled in the Amendment filed December 10, 2007.

2. Rejection under 35 U.S.C. § 103(a) as being unpatentable over Zejda in view of Maeda et al. and Ando et al.

Claims 1-8

The Examiner's Position:

The Examiner asserted that Zejda substantially teaches the claimed apparatus and method. The Examiner acknowledged that Zejda does not disclose means for generating a plasma in the interior space of the chamber, an inlet portion extending exteriorly of the chamber, a pair of arcuately shaped tubular gas outlet portions, means for applying a bias potential to the gas supply means, wherein the means for applying a bias potential is electrically isolated from the means for generating a plasma. The Examiner averred that apparatus of Zejda would inherently require a power supply means to generate a plasma and that Ando et al. disclose means for generating plasma. The Examiner further maintained that Ando et al. teach an inlet portion extending exteriorly of the chamber. The Examiner relied on Maeda et al. for the teaching of arcuate gas supply means. The Examiner concluded that it would have been obvious to combine the teachings of Zejda, Maeda et al., and Ando et al. in order to allow the depositing of a uniform film with little damage.

Appellant's Position:

As disclosed in the present specification, the present invention suppresses the premature ionization of inert gases (plasma formation), the erosion of the gas delivery system, and the creation of the decomposed species adjacent the gas delivery system (page 10, lines 4-26).

The combination of Zejda, Maeda et al., and Ando et al. does not suggest the claimed apparatus adapted for treating or processing at least one substrate/workpiece in a plasma.

The combination of Zejda, Maeda et al., and Ando et al. does not suggest a gas supply means for injecting gas(es) into the interior space of the chamber comprising an outlet extending into the chamber and including a pair of arcuately-shaped tubular gas outlet portions for injecting gas(es) into the interior space, and the arcuately-shaped tubular gas outlet portions are positioned between the spaced-apart pair of cathode/target assemblies, as required by claim 1.

It would not have been obvious to one of ordinary skill in the art to combine Maeda et al. with Ando et al. and Zejda in the manner proposed by the Examiner. Ando et al. and Zejda are directed to sputtering apparatuses and processes, while Maeda et al. is directed to a chemical vapor deposition apparatus and method. The sputtering apparatuses and methods of Ando et al. and Zejda are very different, and they are even further different from the CVD apparatus and method of Maeda et al. It would not have been obvious to one of ordinary skill in this art to modify the Zejda apparatus into a configuration disclosed by Ando et al. and Maeda et al. Modifying the Zejda apparatus into the Ando et al. and Maeda et al. configurations, even if it was obvious to do so, and Appellant maintains it is not, would significantly alter the functionality of the Zejda apparatus. For example, in Zejda the cathodes (6, 7) face the substrate (11), while as shown in Fig. 7, the targets (13) of Ando et al. do not face the substrate and a shutter (17) is between the anode (71) with the substrate (70) and the cathode. Maeda et al. apparatus, because it is directed to CVD, does not have targets. It is not seen how Zejda could be combined with Ando et al. and Maeda et al. and still retain the benefits and features of Zejda. For example, if Zejda is combined with Ando et al. to provide the pair of cathode/target assemblies and injecting a gas into the space between the pair of cathode/target assemblies, the cathode/target assemblies would directly face the substrate and the benefits of the shutter would be lost. Further,

because Maeda et al. is directed to CVD the gas introduced via the gas injectors and the gas injectors themselves, perform a completely different function than the gas and injectors in Zejda and Ando et al. In a CVD process the gas forms the material to be deposited on the substrate, while in a sputter process the gas is used to knock molecules to be deposited on the substrate off of a target.

Clearly, Maeda et al. is in different field of endeavor (CVD), than Zejda, Ando et al., and the present invention (sputtering). "In order to rely on a reference as a basis for rejection of applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oeticker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). Maeda et al. is neither directed to the field of Appellant's endeavor, sputtering, nor pertinent to the problem with which Appellant was concerned, premature ionization of inert gases (plasma formation), the erosion of the gas delivery system, and the creation of the decomposed species adjacent the gas delivery system.

Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge readily available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). There is no suggestion in Zejda, Ando et al., and Maeda et al. to modify the sputtering apparatus of Zejda to include gas supply means for injecting gas(es) into the interior space of the chamber comprising an outlet extending into the chamber and including a pair of arcuately-shaped tubular gas outlet portions for injecting gas(es) into the interior space, and the arcuately-shaped tubular gas outlet portions are positioned between the spaced-apart pair of cathode/target assemblies, as required by claim 1; nor does common sense dictate the Examiner-

asserted modification. The Examiner has not provided any evidence that there would be any obvious benefit in making the asserted modification of Zejda. *See KSR Int'l Co. v. Teleflex, Inc.*, 500 U.S. ____ (No. 04-1350, April 30, 2007) at 20.

The mere fact that references can be modified does not render the resulting combination obvious unless the prior art also suggests the desirability of the modification. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Zejda, Ando et al., and Maeda et al. do not suggest the desirability of modifying the Zejda apparatus to provide the apparatus required by claim 1.

The requisite motivation to support the ultimate legal conclusion of obviousness under 35 U.S.C. § 103 is not an abstract concept, but must stem from the applied prior art as a whole and realistically impel one having ordinary skill in the art to modify a specific reference in a specific manner to arrive at a specifically claimed invention. *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995); *In re Newell*, 891 F.2d 899, 13 USPQ2d 1248 (Fed. Cir. 1989). Accordingly, the Examiner is charged with the initial burden of identifying a source in the applied prior art for the requisite realistic motivation. *Smiths Industries Medical System v. Vital Signs, Inc.*, 183 F.3d 1347, 51 USPQ2d 1415 (Fed. Cir. 1999); *In re Mayne*, 104 F.3d 1339, 41 USPQ2d 1449 (Fed. Cir. 1997). There is no motivation in Zejda, Ando et al., or Maeda et al. to modify the sputtering apparatus of Zejda so that it includes a gas supply means for injecting gas(es) into the interior space of the chamber comprising an outlet extending into the chamber and including a pair of arcuately-shaped tubular gas outlet portions for injecting gas(es) into the interior space, and the arcuately-shaped tubular gas outlet portions are positioned between the spaced-apart pair of cathode/target assemblies, as required by claim 1.

In rejecting a claim under 35 U.S.C. § 103, the Examiner is required to discharge the initial burden by, *inter alia*, making "**clear and particular**" factual findings as to a **specific understanding**

or **specific technological principle** which would have **realistically** impelled one having ordinary skill in the art to modify an applied reference to arrive at the claimed invention based upon facts, -- not generalizations. *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 57 USPQ2d 1161 (Fed. Cir. 2000); *Ecolochem Inc. v. Southern California Edison, Co.*, 227 F.3d 1361, 56 USPQ2d 1065 (Fed. Cir. 2000); *In re Kotzab, supra*; *In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999). That burden has not been discharged, as the Examiner has provided no factual basis for modifying the Zejda sputtering apparatus to include gas supply means for injecting gas(es) into the interior space of the chamber comprising an outlet extending into the chamber and including a pair of arcuately-shaped tubular gas outlet portions for injecting gas(es) into the interior space, and the arcuately-shaped tubular gas outlet portions are positioned between the spaced-apart pair of cathode/target assemblies, as required by claim 1.

The only teaching of the claimed sputter deposition apparatus is found in Appellant's disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must not be based on appellant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). It is apparent that the Examiner's conclusion of obviousness is rooted in an impermissible hindsight reconstruction of Appellant's apparatus in view of Appellant's disclosure.

Claims 11-14, 16, and 18-20

The Examiner's Position:

The Examiner asserted that Zejda substantially teaches the claimed apparatus and method. The Examiner acknowledged that Zejda does not disclose means for generating a plasma in the interior space of the chamber, an inlet portion extending exteriorly of the chamber, a pair of arcuately shaped tubular gas outlet portions, means for applying a bias potential to the gas supply means, wherein the

means for applying a bias potential is electrically isolated from the means for generating a plasma. The Examiner averred that apparatus of Zejda would inherently require a power supply means to generate a plasma and that Ando et al. disclose means for generating plasma. The Examiner further maintained that Ando et al. teach an inlet portion extending exteriorly of the chamber. The Examiner relied on Maeda et al. for the teaching of arcuate gas supply means. The Examiner concluded that it would have been obvious to combine the teachings of Zejda, Maeda et al., and Ando et al. in order to allow the depositing of a uniform film with little damage.

Appellant's Position:

As disclosed in the present specification, the present invention suppresses the premature ionization of inert gases (plasma formation), the erosion of the gas delivery system, and the creation of the decomposed species adjacent the gas delivery system (page 10, lines 4-26).

The combination of Zejda, Maeda et al., and Ando et al. do not suggest the claimed method of treating or processing at least one substrate/workpiece in a plasma.

The combination of Zejda, Maeda et al., and Ando et al. does not suggest a method of treating or processing at least one substrate/workpiece in a plasma, comprising the step of injecting gas(es) between the spaced-apart pair of cathode/target assemblies by means of an electrically isolated gas supply means having a pair of arcuately-shaped tubular gas outlet portions, as required by claim 11.

It would not have been obvious to one of ordinary skill in the art to combine Maeda et al. with Ando et al. and Zejda in the manner proposed by the Examiner. Ando et al. and Zejda are directed to sputtering apparatuses and processes, while Maeda et al. is directed to a chemical vapor deposition apparatus and method. The sputtering apparatuses and methods of Ando et al. and Zejda are very different, and they are even further different from the CVD apparatus and method of Maeda et al. It

would not have been obvious to one of ordinary skill in this art to modify the Zejda apparatus into a configuration disclosed by Ando et al. and Maeda et al. Modifying the Zejda apparatus into the Ando et al. and Maeda et al. configurations, even if it was obvious to do so, and Applicant maintains it is not, would significantly alter the functionality of the Zejda apparatus. For example, in Zejda the cathodes (6, 7) face the substrate (11), while as shown in Fig. 7, the targets (13) of Ando et al. do not face the substrate and a shutter (17) is between the anode (71) with the substrate (70) and the cathode. The Maeda et al. apparatus, because it is directed to CVD does not have targets. It is not seen how Zejda could be combined with Ando et al. and Maeda et al. and still retain the benefits and features of Zejda. For example, if Zejda is combined with Ando et al. to provide the pair of cathode/target assemblies and injecting a gas into the space between the pair of cathode/target assemblies, the cathode/target assemblies would directly face the substrate and the benefits of the shutter would be lost. Further, because Maeda et al. is directed to CVD the gas introduced via the gas injectors and the gas injectors themselves, perform a completely different function than the gas and injectors in Zejda and Ando et al. In a CVD process the gas forms the material to be deposited on the substrate, while in a sputter process the gas is used to knock molecules to be deposited on the substrate off of a target.

Clearly, Maeda et al. is in different field of endeavor (CVD), than Zejda, Ando et al., and the present invention (sputtering). "In order to rely on a reference as a basis for rejection of applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oeticker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). Maeda et al. is neither directed to the field of Appellant's endeavor, sputtering, nor pertinent to the problem with which Appellant was concerned, premature ionization of inert gases (plasma formation), the erosion of the gas delivery system, and the creation of the decomposed species adjacent the gas delivery system.

Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge readily available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). There is no suggestion in Zejda, Ando et al., and Maeda et al. to modify the method of Zejda to include the step of injecting gas(es) between the spaced-apart pair of cathode/target assemblies by means of an electrically isolated gas supply means having a pair of arcuately-shaped tubular gas outlet portions, as required by claim 11; nor does common sense dictate the Examiner-asserted modification. The Examiner has not provided any evidence that there would be any obvious benefit in making the asserted modification of Zejda. *See KSR Int'l Co. v. Teleflex, Inc.*, 500 U.S. ____ (No. 04-1350, April 30, 2007) at 20.

The mere fact that references can be modified does not render the resulting combination obvious unless the prior art also suggests the desirability of the modification. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Zejda, Ando et al., and Maeda et al. do not suggest the desirability of modifying the Zejda method to provide the method required by claim 11.

The requisite motivation to support the ultimate legal conclusion of obviousness under 35 U.S.C. § 103 is not an abstract concept, but must stem from the applied prior art as a whole and realistically impel one having ordinary skill in the art to modify a specific reference in a specific manner to arrive at a specifically claimed invention. *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995); *In re Newell*, 891 F.2d 899, 13 USPQ2d 1248 (Fed. Cir. 1989). Accordingly, the Examiner is charged with the initial burden of identifying a source in the applied prior art for the requisite realistic motivation. *Smiths Industries Medical System v. Vital Signs, Inc.*, 183 F.3d 1347, 51

USPQ2d 1415 (Fed. Cir. 1999); *In re Mayne*, 104 F.3d 1339, 41 USPQ2d 1449 (Fed. Cir. 1997).

There is no motivation in Zejda, Ando et al., or Maeda et al. to modify the method of Zejda so that it includes the step of injecting gas(es) between the spaced-apart pair of cathode/target assemblies by means of an electrically isolated gas supply means having a pair of arcuately-shaped tubular gas outlet portions, as required by claim 11.

In rejecting a claim under 35 U.S.C. § 103, the Examiner is required to discharge the initial burden by, *inter alia*, making "**clear and particular**" factual findings as to a **specific understanding** or **specific technological principle** which would have **realistically** impelled one having ordinary skill in the art to modify an applied reference to arrive at the claimed invention based upon facts, -- not generalizations. *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 57 USPQ2d 1161 (Fed. Cir. 2000); *Ecolochem Inc. v. Southern California Edison, Co.*, 227 F.3d 1361, 56 USPQ2d 1065 (Fed. Cir. 2000); *In re Kotzab, supra*; *In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999). That burden has not been discharged, as the Examiner has provided no factual basis for modifying the Zejda sputtering method to include the step of injecting gas(es) between the spaced-apart pair of cathode/target assemblies by means of an electrically isolated gas supply means having a pair of arcuately-shaped tubular gas outlet portions, as required by claim 11.

The only teaching of the claimed method is found in Appellant's disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must not be based on appellant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). It is apparent that the Examiner's conclusion of obviousness is rooted in an impermissible hindsight reconstruction of Appellant's method in view of Appellant's disclosure.

3. Rejection under 35 U.S.C. § 103(a) as being unpatentable over Zejda in view of Maeda et al. and Ando et al. and further in view of Suzuki et al.

Claim 17

The Examiner's Position:

The Examiner acknowledged that Zejda, Ando et al., and Maeda et al. do not disclose the claimed reactive sputtering of a ferromagnetic target material in an oxygen-containing plasma. The Examiner relied on the teachings of Suzuki et al. to provide this step and asserted that it would have been obvious to combine Suzuki et al. with Zejda, Maeda et al., and Ando et al.

Appellant's Position:

The combination of Suzuki et al. with Zejda, Maeda et al., and Ando et al., however, does not suggest the claimed apparatus and method because Suzuki et al. do not cure the deficiencies of Zejda, Maeda et al., and Ando et al. Suzuki et al. do not suggest the steps of mounting/positioning at least one substrate/workpiece between a spaced-apart pair of cathode/target assemblies in the interior space of the chamber, and injecting gas(es) between the spaced-apart pair of cathode/target assemblies by means of an electrically isolated gas supply means having a pair of arcuately-shaped tubular gas outlet portions, as required by claim 11.

The dependent claims are allowable for at least the same reasons as the independent claims from which they depend and further distinguish the claimed apparatus and method.

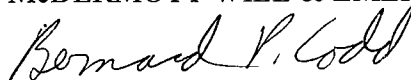
CONCLUSION

Based upon the arguments submitted supra, Appellant respectfully submits that the Examiner's rejections under 35 U.S.C. §§ 112 and 103 are not legally viable. Appellant, therefore, respectfully solicits the Honorable Board to reverse the Examiner's rejections of claims 7 and 13 as being indefinite; claims 1-8, 11-14, and 16-20 as being obvious as evidenced by Zejda, Maeda et al., and Ando et al.; and claim 17 as being obvious as evidenced by Zejda, Maeda et al., Ando et al., and Suzuki et al.

For all of the foregoing reason, Appellant respectfully submits that the grounds of rejection of the claims on appeal are in error and should be reversed.

Respectfully submitted,

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CLAIMS APPENDIX

1. An apparatus adapted for treating or processing at least one substrate/workpiece in a plasma, comprising:

- (a) a chamber defining an interior space;
- (b) means for generating a plasma in said interior space of said chamber;
- (c) mounting means adapted for positioning at least one substrate/workpiece in said interior space of said chamber for receiving treatment in said plasma; and
- (d) a gas supply means for injecting gas(es) into said interior space of said chamber,

comprising:

- (i) an inlet portion extending exteriorly of said chamber;
- (ii) an outlet extending into said chamber and including a pair of arcuately-shaped tubular gas outlet portions for injecting gas(es) into said interior space; and
- (iii) means for applying a bias potential to said gas supply means for suppressing plasma formation at said outlet portions, wherein said means for applying a bias potential is electrically isolated from said means for generating a plasma, and

wherein said apparatus comprises a spaced-apart pair of cathode/target assemblies and said mounting means positions at least one substrate/workpiece in the space between said pair of cathode/target assemblies, and said arcuately-shaped tubular gas outlet portions are positioned between said spaced-apart pair of cathode/target assemblies.

2. The apparatus as in claim 1, further comprising:

- (e) means for electrically isolating said gas supply means from said chamber and said means for generating said plasma.

3. The apparatus as in claim 2, wherein:

said outlet portion of said gas supply means extends through an electrically insulated opening in a wall of said chamber.

4. The apparatus as in claim 1, wherein:

said means for applying said bias potential comprises means for applying a DC, AC, or RF bias potential.

5. The apparatus as in claim 4, wherein:

said means for applying said bias potential comprises means for applying a selected polarity DC bias potential of up to about 1,000 V.

6. The apparatus as in claim 1, wherein:

said interior space of said chamber is adapted to be maintained at a reduced pressure.

7. The apparatus as in claim 1, wherein said apparatus is adapted to perform a plasma treatment or process selected from the group consisting of: sputter etching, reactive sputter etching, sputter deposition, and reactive sputter deposition.

8. The apparatus as in claim 7, wherein said apparatus is adapted to perform a sputter deposition or reactive sputter deposition process.

11. A method of treating or processing at least one substrate/workpiece in a plasma, comprising steps of:

(a) providing an apparatus comprising a chamber defining an interior space and including means for generating a plasma within said interior space;

(b) mounting/positioning at least one substrate/workpiece between a spaced-apart pair of cathode/target assemblies in said interior space of said chamber;

(c) injecting gas(es) between said spaced-apart pair of cathode/target assemblies by means of an electrically isolated gas supply means having a pair of arcuately-shaped tubular gas outlet portions;

(d) generating a plasma in said interior space of said chamber via said means for generating a plasma;

(e) applying a bias potential to said gas supply means to suppress plasma formation at said at least one outlet orifice, wherein said gas supply means is electrically isolated from said means for generating a plasma; and

(f) treating/processing said at least one substrate/workpiece in said plasma.

12. The method according to claim 11, wherein:

step (a) comprises providing an apparatus wherein said chamber is adapted to be maintained at a reduced pressure.

13. The method according to claim 12, wherein:

step (a) comprises providing an apparatus adapted to perform a plasma treatment or process selected from the group consisting of: sputter etching, reactive sputter etching, sputter deposition, and reactive sputter deposition.

14. The method according to claim 13, wherein:

step (a) comprises providing an apparatus adapted to perform a sputter deposition or reactive sputter deposition process.

16. The method according to claim 14, wherein:

step (b) comprises mounting/positioning at least one disk-shaped substrate/workpiece for a magnetic or magneto-optical (MO) recording medium.

17. The method according to claim 16, wherein:

step (f) comprises reactive sputtering of a ferromagnetic target material in an oxygen-containing plasma to deposit an oxygen-containing ferromagnetic layer on each surface of said at least one substrate/workpiece.

18. The method according to claim 11, wherein:

step (c) comprises injecting gas(es) into said interior space of said chamber by means of an electrically isolated gas supply means having an inlet portion extending exteriorly of said chamber and an outlet portion extending into said chamber via an electrically insulated opening in a wall of said chamber.

19. The method according to claim 11, wherein:

step (e) comprises applying a DC, AC, or RF bias potential.

20. The method according to claim 19, wherein:

step (e) comprises applying a selected polarity DC bias potential of up to about 1,000 V.

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EVIDENCE APPENDIX

None.

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RELATED PROCEEDINGS APPENDIX

None.